PATENT CLAIMS

1. A communication method for real-time applications in a distributed computer system, made up of a number of computer nodes 111, 112, 113 and 114, where each computer node is provided with a host computer 210 and a communication controller 230, where the communication network interface 220 is located between the communication controller 230 and the host computer 210, where the communication controllers 230 are connected via a communication system 130, and where each communication controller is provided with a local transmission memory and a local receiver memory for sending and receiving data, wherein the communication controller of a time-driven communication system decides on the basis of a discrimination bit whether a data element contains status data or event data and where the communication controller manages the status data in the form *up-date-in-place* by the host in the transmission memory, *non-consuming reading* by the communication controller out of the transmission memory, *up-date-in-place* by the communication controller in the reception memory and *non-consuming reading* by the host computer out of the reception memory and manages the event data in the form *exact one-time storage* of the host data in a ring buffer store of the transmission memory, *consuming reading* of the communication controller out of the ring buffer store of the transmission memory, *exact on-time* storage by the communication controller in a ring buffer store of the reception memory and consuming reading by the host computer out of the ring buffer store of the reception memory.

2. The communication method for real-time applications as described in

Claim 1, wherein the discrimination bits that distinguish between status data and event data are a part of the transmitted message.

3. The communication method for real-time applications as described in Claim 1, wherein the discrimination bit that distinguishes between status data and event data is allocated *a priori* to the data name and can be derived from the data name.

4. The communication method for real-time applications as described in Claim 1, wherein the discrimination bits that distinguish between status data and event data can be derived from the moment of arrival of a message.

5. The communication method for real-time applications as described in one or more of Claims 1 to 4, wherein the communication controller at the receiver transmits an intercept signal to the host computer no later than immediately after the assignment of the last open element in the ring buffer store for event data in order to induce the host computer to consume the event data and provide memory space for the next event data elements.

6. The communication method for real-time applications as described in one or more of Claims 1 to 5, wherein the communication controller at the receiver, based on the moment of arrival of a data element at the receiver, decides whether a data element contains user data or control data of a higher protocol.

7. The communication method for real-time applications as described in one or more of Claims 1 to 6, wherein the communication controller at the receiver, based on the current round position of a time-driven protocol, decides whether a data element transmitted in this round contains user data or control data of a

higher protocol.

8. The communication method for real-time applications as described in one or more of Claims 1 to 7, wherein the communication controllers interpret the event data in the sense of an *a priori* known higher protocol and present them to the communication network interface 220 at the sender and at the receiver in the form as prescribed by this *a priori* known higher protocol.

9. The communication method for real-time applications as described in one or more of Claims 1 to 8, wherein the communication controllers present the event data to the communication network interface 220 at the sender and at the receiver in the form as prescribed by the CAN protocol.

10. The communication method for real-time applications as described in one or more of Claims 1 to 8, wherein the communication controllers present the event data to the communication network interface 220 at the sender and at the receiver in the form as prescribed by the OMG *Internet Inter-ORB Protocol* (IIOP).

11. A communication method for real-time applications as described in one or more of claims 1 to 8, wherein the communication controllers simultaneously simulate various higher protocols for the transmission of event data.

12. A communication controller for real-time applications, wherein the communication controller implements one or more of the procedural steps corresponding to Claims 1 to 11 in the hardware by means of a state machine or in a micro-program.